



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,888	09/05/2003	Takayuki Araki	Q77315	6640
23373	7590	05/24/2006		
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
			EXAMINER HU, HENRY S	
			ART UNIT 1713	PAPER NUMBER

DATE MAILED: 05/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/654,888

Applicant(s)

ARAKI ET AL.

Examiner

Henry S. Hu

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Response of April 12, 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 29-55 is/are pending in the application.
- 4a) Of the above claim(s) 29-44 and 48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 45-47 and 49-55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 29-55 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This Office Action is in response to **Response** filed on April 12, 2006. No claim was amended, cancelled or added. As discussed earlier, the Applicants have elected **without traverse on Claims 45-55** (fluorine-containing polymer) **along with Species (6) for a = 1-3; b = 0, c = 1 (Claims 45-47 and 49-55 are thereby elected)**. The examiner **accepts Applicants' drawing in one sheets with one figure** filed on September 5, 2003 along with this application (BD is on page 8). **Claims 29-55 are now pending** with two independent claims (Claim 29 and Claim 45), while Claims 29-44 and 48 are withdrawn from consideration. An action follows.

### *Response to Argument*

2. In view of the Applicants' argument on pages **3-5** of Remarks with no scope of claim limitation being changed, **103 rejection over Fryd/Koike is sustained**.

In responding to Applicants' argument on page 2 regarding the use of the claimed Rf group which is defined in Claim 45 as having 1 to 5 carbonyl groups so as to have chelating potential, the Examiner **withdraws ODP rejection** since even in the case that a cure site is to be used, it will not be obvious for one having ordinary skill in the art to pick up the one with keto group(s).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. The limitation of elected parent **Claim 45** in present invention relates to fluorinated homopolymer and/or copolymers comprising "M" and "A" repeating units as specified below (the amount of M can be 0.1 to 100 mole%).

The fluorine-containing homo- or co-polymers described in **Claim 45** has a "M" structural unit from monomer of  $CX^1X^2=CX^3-(CX^4X^5)_a-(C=O)_b-(O)_c-R_f$  wherein the factors of  $X^1$  and  $X^2$  can be the same or different from H or F;  $X^3$  is H, F,  $CH_3$  or  $CF_3$ ;  $X^4$  and  $X^5$  can be the same or different from H, F or  $CF_3$ ;  $R_f$  can be organic group (Y)-containing alkylene or

Art Unit: 1713

*alkylene ether; and a is integer of 0-3, while b and c can be 0 or 1. Claims 45-47 and 49-55 are pending since Species # (6) for  $a = 1-3$ ;  $b = 0$ ,  $c = 1$  is elected by the Applicants. See other limitations of dependent Claims 46-47 and 49-55.*

5. Claims 45-47 and 49-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fryd et al. (US 6,869,693 B2 with an effective US filing date of October 10, 2000 or its equivalent EP WO 02/31896 A2) in view of Koike et al. (EP 1,072,905 A1) for the reasons set forth in paragraphs 6-9 of office action dated 1-12-2006 as well as the discussion below.

6. **Applicants:** Applicants have claimed on parent **Claim 45** an unexpected way of obtaining fluorinated homopolymer and/or copolymers comprising **“M” and “A” repeating units** (since the amount of M can be 0.1 to 100 mole%). The key point is that “M” is from a specific monomer of  $CX^1X^2=CX^3-(CX^4X^5)_a-(C=O)_b-(O)_c-R_f$  wherein the factors of  $X^1$  and  $X^2$  can be the same or different from H or F;  $X^3$  is H, F,  $CH_3$  or  $CF_3$ ;  $X^4$  and  $X^5$  can be the same or different from H, F or  $CF_3$ ; **R<sub>f</sub> can be organic group (Y)-containing alkylene or alkylene ether; and a is integer of 0-3, while b and c can be 0 or 1.** It is noted that Claims 45-47 and 49-55 are pending since Species # (6) for  $a = 1-3$ ;  $b = 0$ ,  $c = 1$  is elected by Applicants filed on 11-30-2005.

7. The only one 103(a) rejection is relying Fryd/Koike combination as reference, it cannot stand as follows: Although Fryd's fluoropolymer is reading on the specified R<sub>f</sub> group having multiple keto groups (for instance, beta-dicarbonyl ligand) so as to complex the metal ions, Fryd

Art Unit: 1713

is still silent about making a copolymer using the claimed ether-type of formula (2) as "M" structure based on the elected species # (6) for a = 1-3; b = 0, c = 1. As discussed earlier by Examiner, secondary reference **Koike** may have disclosed two things as: (A) non-crystallinity is existed on fluoropolymer and (B) a metal chelate compound (having multiple keto groups so as to complex metal ions) is distributed in the non-crystalline polymer. However, such multiple keto groups are with metal chelate compound which is not attaching to the polymer, **Koike** thereby does not disclose the claimed Rf structure having the required unit of keto groups anywhere in the side chain of polymer at all (see page 3 bottom section of Remarks).

Therefore, a motivation to link Fryd with Koike is missing (see hindsight reconstruction on page 5 of Remarks).

8. Examiner: Parent Claim 45 is involved the use of an ether type structure as well as a specified Rf pendant group having multiple keto groups inside "M" repeating unit of polymer. In view of Applicants' arguments, the Examiner fully understands current focus is on the motivation to link Fryd with Kolbe.

Firstly, **fluoropolymers** and "many" other types of polymers (or copolymers) including polyvinyl "ethers" or polyacrylates have been proved by Fryd to be very useful to carry functional groups such as the claimed enolate or beta-dicarbonyl ligand so as to complex metal ions (column 4, line 11-27).

Art Unit: 1713

9. Secondly, Koike has disclosed that it fluoropolymer is preferably used, particularly one having **ether type structure as described on formula 1-3** at page 3, line 15-58. In case that fluorinated metal chelate compound is used **as one component in the composition**, better solubility and/or compatibility can be effectively obtained (page 4, line 44-48). Koike has thereby explicitly and implicitly pointed out the advantage to use ether structure in fluoropolymer whenever a keto-type chelate is mixed.

10. Finally, both references including Fryd and Koike are dealing with making fluorinated compositions including a mixture of fluoropolymer and metal chelate for optical emission and transmission as well as may be for the same and/or similar "chelate" application. For instance, see "693" on title, and column 1, line 18-48; see "905" on title and paragraphs 0002 and 0003.

11. Therefore, one having ordinary skill in the art would have found it obvious to modify Fryd's polymeric composition by using an ether-type **perfluoropolymer carrying a fluorinated metal chelate as a moiety inside the polymer's pendant group** as taught by Koike. By this modification, one would expect to obtain a better and more diversified fluorinated copolymer with improved optical transparent properties to be excellent in reducing transmission loss when using a near infrared light and with better solubility and/or compatibility.

12. Present application may have already disclosed inside of specification that some **good results** as well as some advantages can be obtained from using such a fluoropolymer due to the existence of such a combination from such a specific functional group and such an ether

Art Unit: 1713

structure, which may be also achieved by the prior art. Therefore, in order to be at least somewhat distinguished from prior art, the Applicants may need to show the criticality why using such a combination of keto functional group and ether structure to be both inside the polymer. In conclusion, the only one 103(a) rejection is sustained with the same ground of rejection.

### *Conclusion*

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

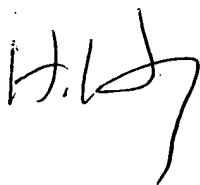
14. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is (571) 272-1103. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.



Art Unit: 1713

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Henry S. Hu

Patent Examiner, Art Unit 1713, USPTO

May 19, 2006



DAVID W. WU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700